MONTHLY ASSET MAINTENANCE REPORT

Project: Upper Tamor Hydropower Project 285 MW, Taplejung
Company: Tamor Energy Pvt. Ltd.
Prepared for: Executive Leadership Team and Department Heads
Subject: Comprehensive Vehicle & Equipment Maintenance and Breakdown Analysis
Prepared by: Rupesh Rai, Mechanical Engineer

Date: December 1, 2025

1. Executive Summary

November 2025 saw intense operational activity with a total of 150–152 unique breakdowns recorded across the fleet. The maintenance team continued to demonstrate strong commitment and technical capability, achieving an overall repair completion rate of approximately 85–91% despite persistent spare-parts delays.

It is important to highlight that approximately 90% of the operating machinery and vehicles are relatively new and are being operated under normal-to-moderate hilly construction conditions rather than extreme or abusive environments. This makes the high frequency of breakdowns and component failures particularly concerning, as these assets should theoretically be well within their reliable service life.

The primary drivers of downtime remain:

- Chronic delays in spare-parts procurement and supply-chain bottlenecks
- Recurring failures of certain high-wear components also mainly due to excessive load (leaf springs, UJ crosses, brake systems, injectors, electrical items, hydraulic seals, track chains, etc.)
- Sub-optimal on-site inventory of fast-moving spares

While daily routine repairs (tyre punctures, greasing, minor adjustments) are being handled promptly, complex and parts-dependent repairs continue to accumulate, resulting in 5-9% of breakdowns being carried forward into December.

2. Consolidated Breakdown Statistics (6–30 November 2025)

Description	Quantity	Percentage
Total Unique Breakdowns	152 (avg.)	100%
Repairs Completed	138	91%
Repairs Pending / Carried Forward	14	9%

3. Breakdowns by Major Asset Category (Consolidated)

Asset Type	Total Breakdowns	Completed	Pending	Completion Rate
Tipper Trucks	66	61	5	92%
Bolero Campers	22	19	3	86%
Excavators	29	26	3	90%
Air Compressors	17	15	2	88%
Loaders & Others	18	17	1	94%
Total	152	138	14	91%

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4. Most Frequent Failure Modes (November 2025)

Failure Category	Approx. Occurrences	Mainly Affected Assets
Tyre punctures (routine)	25+	All vehicles
Leaf springs & suspension	18–22	Tipper trucks
UJ cross / propeller shaft	15–18	Tippers & Bolero campers
Brake system components	16–20	Tippers & Bolero
Injector / fuel system	14–16	Bolero campers
Electrical / wiring	14–18	Air compressors, Bolero, Excavators
Track chain & pins	10–12	Excavators
Hydraulic leaks / hoses	9–11	Excavators, Boomers & loaders
ACDT & back compressor	2–4	Tippers, Excavators

5. Performance Highlights & Challenges

i. Strengths Demonstrated by the Team
- 91% overall completion rate under high daily workload
- Same-day resolution of all routine tasks (greasing, tyre repairs, minor adjustments)
- Successful on-site fabrication and complex repairs (propeller shafts, bucket rebuilding, engine module assembly)
- Thorough daily logging and photographic documentation

ii. Key Constraints
- Spare-parts lead times continue to be the single largest bottleneck (responsible for >90% of pending repairs)
- Certain fast-moving items remain chronically out of stock on site despite repeated requisitions
- Long-pending critical repairs (e.g., Komatsu PC350 engine overhaul since mid-October, multiple air-compressor electrical kits, CAT 323D3 RPM sensor, Eicher back-compressor kits)

6. Immediate & Strategic Recommendations (Reiterated & Prioritised)

Given that 90% of the fleet is relatively new and not subjected to unusually harsh conditions, the current breakdown frequency is unacceptable and points to preventable systemic gaps. The following actions are now urgent:

i. Creation of Dedicated “High-Frequency Repair Bays” with Specialised Manpower (immediate – December 2025)

To dramatically reduce downtime on the two most time-consuming and repetitive repair categories, I propose the immediate recruitment / redeployment of two full-time specialized technicians to be permanently based at Mitlung & Tapethok Workshop:

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- Leaf Spring & Suspension Specialist Mechanic (Experienced in multi-leaf assembly rebuilding, re-bushing, centre-bolt replacement, and UJ cross/prop-shaft work on TATA, Eicher & Ashok Leyland chassis)
- Dedicated Tyre Fitter cum Wheel Alignment Technician (Equipped with portable tyre changer, wheel balancer, nitrogen facility and trained in proper torqueing & hub maintenance)

Expected Impact (conservative estimate):

- Current average downtime for leaf-spring/suspension jobs: 1–2 days → targeted **<24 hours**
- Tyre-related stoppages (punctures + wheel damage): currently 2–4 hours → targeted **<1 hour**
- Combined effect: recovery of **250–300 productive vehicle-hours per month** and visible reduction in pending list within the first month

These two positions will pay for themselves many times over through reduced downtime and overtime alone, while simultaneously improving safety and driver morale. By approving the immediate addition of the Leaf Spring Specialist and Tyre Fitter, management will send a clear message of proactive support to the entire site team, achieve the fastest possible ROI among all proposed measures, and bring an immediate and visible improvement in fleet availability during the critical winter working window, and demonstrate that field feedback is being translated into decisive action.

ii. Accelerated Fleet & Component Lifecycle Review
- Immediate third-party audit of high-failure components (leaf springs, UJ kits, injectors, electrical parts) to determine if design/specification/supplier quality issues exist.

iii. On-Site Strategic Spares Inventory (within 30 days)
- Leaf spring assemblies & UJ cross kits (all tipper models)
- Brake chambers, linings & master cylinders
- Injector sets & common electrical items (rectifiers, regulators, wiring harness sections)
- Track pins & links for Komatsu/CAT excavators
- Hydraulic seals & hose kits
- Batteries
- Tyres

iii. Supply-Chain KPIs & Backup Vendors
- Establish firm lead-time commitments and identify at least one local/alternate supplier for every top-20 high-failure item.

iv. Mandatory Root-Cause Analysis (RCA)
- Every breakdown causing >3 days downtime must have a one-page RCA submitted within 48 hours of resolution.

v. Predictive & Preventive Regime Strengthening

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- Weekly under-chassis & suspension inspections for all tippers
- Monthly injector cleaning cycle for Bolero fleet
- Daily pre-start electrical checks on air compressors

7. Conclusion

November closed with the month on a strong operational note thanks to the collective effort of the entire mechanical team and the steady oversight of Plant Manager, Er. Min Raj Regmi and the careful daily handling of equipment by our seasoned drivers and operators. Day after day, the crew handled multiple simultaneous breakdowns and still managed to return most machines to service the same or the next day.

Together we kept the project moving forward even on the toughest days. The report shows a clear opportunity: a young fleet operating in standard conditions should run far more smoothly than we are currently experiencing. The path to that improvement lies in a handful of practical, already-identified measures around inventory and procurement discipline.

We look forward to management's support in rolling out the recommended actions so the team can shift its energy from constant repairs to sustained reliability. Thank you for the continued confidence in our section. We remain fully committed to turning these challenges into lasting reliability for the Upper Tamor Hydropower Project.

Respectfully,
Rupesh Rai
Mechanical Engineer

Fig:1 Photographic evidence of major repairs & recurring failures with repair bay

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